Project: 2011 Annual Groundwater Monitoring Event – Ashland Aqualon Functional Ingredients, 1111 Hercules Road, Hopewell, Virginia
Laboratory: Test America, Savannah, Georgia
Sample Delivery Group: HAQ035
Fraction: Organic
Matrix: Aqueous
Report Date: 7/18/2011

This analytical quality assurance report is based upon a review of analytical data generated for groundwater samples. One equipment blank, one field blank, two trip blanks, one field duplicate, and one matrix spike matrix spike duplicate were submitted with the samples in this SDG. The sample locations, laboratory identification numbers, sample collection dates, sample matrix, and analyses performed are presented in Table 1. Test America's, Savannah, Georgia performed all analyses with the exception of acrylamide, performed at the Tallahasee, Florida location.

The samples were analyzed for Hercules-Aqualon Appendix IX volatile organic compounds, Hercules-Aqualon Appendix IX semivolatile organic compounds, and alcohols. The sample analyses were performed in accordance with the procedures outlined in "Test Methods for Evaluating Solid Wastes", SW-846, third edition, Promulgated Updates II, IIA, and III, IVA, and IVB, January 2008. Test America's, Savannah, Georgia performed all analyses with the exception of acrylamide, performed by at the Tallahasee, Florida location.

For the volatile and semivolatile fractions determined by Gas Chromatography/Mass Spectrometry, library searches were performed to "tentatively identify" chromatographic peaks whose characteristics did not match those of targeted compounds. Library searches were performed for up to ten volatile and twenty semivolatile extraneous peaks.

All sample analyses have undergone an analytical quality assurance review to ensure adherence to the required protocols. Results have been validated or qualified according to general guidance provided in the Region III modifications to "Laboratory Data Validation Functional Guidelines for Validating Organic Analyses", USEPA 9/94. This document specifies procedures for validating data generated for CLP analyses. Therefore, the quality control requirements specified in the methods and associated acceptance criteria were also used to evaluate the

non-CLP data. The parameters presented on the following page were evaluated.

X	•	Data Completeness
X	•	Chain of Custody Documentation
X	•	Holding Times
X	•	Instrument Performance
X	•	Initial and Continuing Calibrations
X	•	Laboratory and Field Blank Analysis Results
X	•	Surrogate Compound Recoveries
X	•	Matrix Spike/Matrix Spike Duplicate Recoveries and Reproducibility
X	•	Field Duplicate Analysis Results
X	•	Laboratory Control Sample Results
X	•	Internal Standard Performance
X	•	Qualitative Identification
X	•	Quantitation/Reporting Limits

X - Denotes parameter evaluated.

It is recommended that the data only be used according to the qualifiers presented, and discussed in this report. All other data should be considered qualitatively and quantitatively valid as reported by the laboratory, based on the items evaluated.

Report Approved By:

Shawne M. Rodgers
President

7/18/2011

Date

1.0 *DATA COMPLETENESS*

The average relative response factors were not presented on the summary form for the initial calibration performed on 5/13/2011, or on the summary for the continuing calibration performed on 5/18/2011 @ 1127. The laboratory was contacted and provided corrected summary forms.

The raw data for the allyl alcohol analysis performed on 5/12/2011 @ 0042 is missing from the data package for sample MW-7U. The laboratory was contacted and provided this missing information.

2.0 *CHAIN OF CUSTODY DOCUMENTATION*

The chain of custody documentation was complete.

3.0 *HOLDING TIMES*

Sample Field Blank was extracted for semivolatile organic compounds 1 day outside of the holding time of 7 days, as stated in the current 40 CFR Part 136. Because the sample was extracted outside of holding time, biological or chemical degradation may have occurred. Positive results for semivolatile organic compounds for the sample have been marked with "J" qualifiers to indicate that they are quantitative estimates. Reporting limits (RLs) have been marked "UJ".

Samples Field Dup and NAT-2 were analyzed for alcohol compounds 1 day outside of the holding time of 14 days, as stated in the current 40 CFR Part 136. Because the samples were analyzed outside of holding time, biological or chemical degradation may have occurred. Positive results for alcohol compounds for the samples have been marked with "L" qualifiers to indicate that they are quantitative estimates. RLs have been marked "UL".

4.0 *INSTRUMENT PERFORMANCE*

All criteria were met. No qualifiers were applied.

5.0 *INITIAL AND CONTINUING CALIBRATIONS*

The isobutyl alcohol reporting limits (RLs) for the samples have been rejected, and should be considered suspect. The average relative response factor for volatile organic compound isobutyl alcohol was below 0.05 for the associated initial calibration. The poor response indicates a lack of instrument sensitivity for this compound. RLs have been marked "R" to indicate that they are suspect.

4-Nitroquinoline-1-oxide RLs for the samples have been rejected, and should be considered suspect. The average relative response factor for semivolatile organic compound 4-nitroquinoline-1-oxide was below 0.05 for the associated initial calibration. The poor response indicates a lack of instrument sensitivity for this compound. RLs have been marked "R" to indicate that they are suspect.

6.0 *LABORATORY AND FIELD BLANK ANALYSIS RESULTS*

The positive results reported for the compounds presented below are qualitatively invalid due to the presence of these compounds in associated field and laboratory method blanks. USEPA Region III protocol requires positive results for uncommon contaminants, such as acetophenone or 1, 4-dichlorobenzene, that are less than or equal to five times the associated blank contamination level, to be considered qualitatively invalid. Placing "B" qualifiers next to these quantitative results for the samples has indicated this.

Compound	Samples With Qualified Results
Acetophenone	LF-5
1,4-Dichlorobenzene	LF-5, LF-4, LF-1, LF-3, WWL-3L, WWL-3U, Field Dup, NAT-3, NAT-2, MW-10, MW-7U, MW-7L

7.0 SURROGATE COMPOUNDS

All criteria were met. No qualifiers were applied.

8.0 MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERIES AND REPRODUCIBILITY

All criteria were met. No qualifiers were applied.

9.0 FIELD DUPLICATE RESULTS

Duplicate samples NAT-3 and Field Dup were submitted to the laboratory to evaluate sampling and analytical precision for those organic compounds determined to be present. Results for these duplicate samples are presented in Tables 2. Precision is evaluated by calculating the relative percent difference (%RPD) between duplicate pair results. There are no USEPA-established acceptance criteria for field duplicate samples. EDQ uses internal acceptance criteria of twenty percent for volatile detected compounds (and 25 percent for extractable compounds) to evaluate field duplicate samples.

10.0 *LABORATORY CONTROL SAMPLE RESULTS*

The nondetected results for semivolatile organic 2, 4-dichlorophenol, 2, 4-dimethylphenol, hexachloropropene, and 3&4-methyl phenol are quantitative estimates, and may be higher than reported. Low recoveries for these compounds were obtained for the associated laboratory control sample analysis. The low recovery indicates inefficiencies with the sample extraction/analytical processes. The 2, 4-dichlorophenol, 2, 4-dimethylphenol, hexachloropropene, and 3&4-methyl phenol nondetected results have been marked with "UL" qualifiers to indicate that they are biased low quantitative estimates.

The laboratory did not spike the laboratory control sample with all of the Appendix IX compounds for the volatile and semivolatile analyses. Therefore, the sample data could not be evaluated based on this parameter.

11.0 *INTERNAL STANDARD PERFORMANCE*

All criteria were met. No qualifiers were applied.

12.0 *QUALITATIVE IDENTIFICATION*

All criteria were met. No qualifiers were applied.

13.0 *QUANTITATION/REPORTING LIMITS*

The samples presented in the following table were analyzed at dilutions for volatile organic compounds. The dilution analyses were performed because of the suspected presence of high levels of target compounds and/or interferences. RLs are elevated by the dilution factor for these samples for target compounds that were not detected. The elevated RLs should be noted when assessing the data for these samples.

Sample	Dilution Factor
WWL-3L	100
WWL-3U	10.0

The samples presented below were re-analyzed at dilutions for volatile organic compounds. The samples were re-analyzed because the responses for compounds exceeded the linear range of the GC/ MS instrument. The results for these compounds have been reported from the dilution analyses. All other results are reported from the initial analyses.

Sample	Dilution Factor	Results Exceeding the Linear Range
LF-3	20.0	tert-Butyl alcohol
RAB-MW2	5.0	tert-Butyl alcohol
Field Dup	4000	tert-Butyl alcohol
NAT-3	4000	tert-Butyl alcohol
NAT-2	500	tert-Butyl alcohol
RAB-MW3	5.0	tert-Butyl alcohol

As required by USEPA protocol, all volatile and semivolatile TICs have been reported with "J" qualifiers to indicate that they are quantitative estimates. EDQ has reported only those TIC results that have not been determined to be laboratory or field artifacts, and where possible has grouped TIC of similar classification.

As required by USEPA protocol, all compounds, which were qualitatively identified at concentrations below their respective RLs, have been marked with "J" qualifiers to indicate that they are quantitative estimates.

METHODOLOGY REFERENCES

Analysis	Reference
Volatile Organic Compounds	Method 8260B, "Test Methods for Evaluating Solid Wastes", SW-846, third edition, Promulgated Updates II, IIA, and III, IVA, and IVB, January 2008.
Semivolatile Organic Compounds	Method 8270C, "Test Methods for Evaluating Solid Wastes", SW-846, third edition, Promulgated Updates II, IIA, and III, IVA, and IVB, January 2008.
Alcohols	Method 8015B, "Test Methods for Evaluating Solid Wastes", SW-846, third edition, Promulgated Updates II, IIA, and III, IVA, and IVB, January 2008.

Table 1 Samples For Data Validation Review
2011 Annual Groundwater Monitoring Event - Ashland Aqualon Functional Ingredients
1111 Hercules Road, Hopewell, Virginia
Test America Sample Delivery Group HAQ035

SAMPLE I.D.	LABORATORY I.D	DATE COLLECTED	MATRIX	ANALYSES PERFORMED								
				VOC	SVOC	ALC	MET	CHL	NO2	NO3	TKN	TOC
LF-5	680-67794-1	4/27/2011	Groundwater	X	X	X	X	X	X	X	X	X
LF-4	680-67794-2	4/27/2011	Groundwater	X	X	X	X	X	X	X	X	X
LF-1	680-67794-3	4/27/2011	Groundwater	X	X	X	X	X	X	X	X	X
LF-2	680-67794-4	4/27/2011	Groundwater	X		X	X	X	X	X	X	X
LF-3	680-67794-5	4/27/2011	Groundwater	X	X	X	X	X	X	X	X	X
WWL-2	680-67794-6	4/27/2011	Groundwater	X		X	X	X	X	X	X	X
WWL-1	680-67794-7	4/27/2011	Groundwater	X		X	X	X	X	X	X	X
Trip Blank 2	680-67794-8	4/27/2011	Trip Blank	X								
Equipment Blank	680-67794-9	4/27/2011	Equipment Blank	X	X	X	X	X	X	X	X	X
WWL-3L	680-67794-10	4/27/2011	Groundwater	X	X	X	X	X	X	X	X	X
WWL-3U	680-67794-11	4/27/2011	Groundwater	X	X	X	X	X	X	X	X	X
RAB-MW2	680-67837-1	4/28/2011	Groundwater	X		X	X	X	X	X	X	X
RAB-MW4	680-67837-2	4/28/2011	Groundwater	X		X	X	X	X	X	X	X
Field Dup	680-67837-3	4/28/2011	Groundwater	X	X	X	X	X	X	X	X	X
NAT-3	680-67837-4	4/28/2011	Groundwater	X	X	X	X	X	X	X	X	X
NAT-2	680-67837-5	4/28/2011	Groundwater	X	X	X	X	X	X	X	X	X
NAT-1	680-67837-6	4/28/2011	Groundwater	X		X	X	X	X	X	X	X
RAB-MW3	680-67837-7	4/28/2011	Groundwater	X		X	X	X	X	X	X	X
MW-10	680-67837-8	4/28/2011	Groundwater	X	X	X	X	X	X	X	X	X
Field Blank	680-67837-9	4/28/2011	Field Blank	X	X	X	X	X	X	X	X	X
MW-7U	680-67837-10	4/28/2011	Groundwater	X	X	X	X	X	X	X	X	X
MW-7L	680-67837-11	4/28/2011	Groundwater	X	X	X	X	X	X	X	X	X
Trip Blank 3	680-67837-12	4/28/2011	Trip Blank	X								

Table 2 **Field Duplicate Sample Results for Organic Analyses**
Groundwater Duplicate Samples NAT-3 and Field Dup

Analyte	Sample Result (µg/L)		Field Duplicate Result (µg/L)		RPD	ACTION
	NAT-3		Field Dup			
Acetone	34		30		13	
cis-1,2-Dichloroethene	ND		0.20	J	NC	
t-Butanol	83000		94000		12	
Tetrachloroethene	0.30	J	1.3		125	
1,4-Dioxane	6.8		7.6		11	